

# Contents

## Biology of Blood and Marrow Transplantation

The Official Journal of the American Society for Blood and Marrow Transplantation

### THE BOTTOM LINE

Volume 22, Number 1, January 2016

#### I Hypomethylating Agents as Bridging Therapy before Allogeneic Hematopoietic Stem Cell Transplantation in Patients with Chronic Myelomonocytic Leukemia?

Marie Robin, Pierre Fenaux

#### 3 Ethical Considerations in Pediatric Stem Cell Donation

Bambi J. Grilley

### REPORT

#### 4 International, Multicenter Standardization of Acute Graft-versus-Host Disease Clinical Data Collection: A Report from the Mount Sinai Acute GVHD International Consortium

Andrew C. Harris, Rachel Young, Steven Devine, William J. Hogan, Francis Ayuk, Udomsak Bunworasate, Chantiya Chanswangphuwana, Yvonne A. Efebera, Ernst Holler, Mark Litzow, Rainer Ordemann, Muna Qayed, Anne S. Renteria, Ran Reshef, Matthias Wölfl, Yi-Bin Chen, Steven Goldstein, Madan Jagasia, Franco Locatelli, Stephan Mielke, David Porter, Tal Schechter, Zhanna Shekhovtsova, James L.M. Ferrara, John E. Levine

### EDUCATIONAL REVIEWS

#### II Acute Graft-versus-Host Disease: Novel Biological Insights

Takanori Teshima, Pavan Reddy, Robert Zeiser

#### 17 Fast Cars and No Brakes: Autologous Stem Cell Transplantation as a Platform for Novel Immunotherapies

Miguel-Angel Perales, Craig S. Sauter, Philippe Armand

#### 23 Haploidentical Hematopoietic Stem Cell Transplantation: A Global Overview Comparing Asia, the European Union, and the United States

Jane Apperley, Dietger Niederwieser, Xiao-jun Huang, Arnon Nagler, Ephraim Fuchs, Jeff Szer, Yoshihisa Koda

### BIOLOGY: GENETIC MARKERS

#### 27 Analysis of a Genetic Polymorphism in the Costimulatory Molecule *TNFSF4* with Hematopoietic Stem Cell Transplant Outcomes

Peter T. Jindra, Susan E. Conway, Stacy M. Ricklefs, Stephen F. Porcella, Sarah L. Anzick, Mike Haagenson, Tao Wang, Stephen Spellman, Edgar Milford, Peter Kraft, David H. McDermott, Reza Abdi

Continued

## BIOLOGY: BIOMARKERS

---

- 37**     **Low Counts of B Cells, Natural Killer Cells, Monocytes, Dendritic Cells, Basophils, and Eosinophils are Associated with Postengraftment Infections after Allogeneic Hematopoietic Cell Transplantation**  
*Peter J. Podgorny, Laura M. Pratt, Yiping Liu, Poonam Dharmani-Khan, Joanne Luider, Iwona Auer-Grzesiak, Adnan Mansoor, Tyler S. Williamson, Alejandra Ugarte-Torres, Mette Hoegh-Petersen, Faisal M. Khan, Loree Larratt, Victor H. Jimenez-Zepeda, Douglas A. Stewart, James A. Russell, Andrew Daly, Jan Storek*

## CLINICAL RESEARCH: ADULT

---

- 47**     **Treatment with Hypomethylating Agents before Allogeneic Stem Cell Transplant Improves Progression-Free Survival for Patients with Chronic Myelomonocytic Leukemia**  
*Piyanuch Kongtim, Uday Popat, Antonio Jimenez, Sameh Gaballa, Riad El Fakih, Gabriela Rondon, Julianne Chen, Carlos Bueso-Ramos, Gautam Borthakur, Naveen Pemmaraju, Guillermo Garcia-Manero, Hagop Kantarjian, Amin Alousi, Chitra Hosang, Paolo Anderlini, Issa F. Khouri, Partow Kebriaei, Borje S. Andersson, Betul Oran, Katayoun Rezvani, David Marin, Elizabeth J. Shpall, Richard E. Champlin, Stefan O. Ciurea*
- 54**     **Reducing Treatment-Related Mortality Did Not Improve Outcomes of Allogeneic Myeloablative Hematopoietic Cell Transplantation for High-Risk Multiple Myeloma: A University of Michigan Prospective Series**  
*Attaphol Pawarode, Shin Mineishi, Pavan Reddy, Thomas M. Braun, Yasser A. Khaled, Sung W. Choi, John M. Magenau, Andrew C. Harris, James A. Connelly, Carrie L. Kitko, Brian L. Parkin, Steven C. Goldstein, Gregory A. Yanik, John E. Levine, James L. Ferrara, Daniel R. Couriel*
- 61**     **DNMT3A R882 Mutation with FLT3-ITD Positivity Is an Extremely Poor Prognostic Factor in Patients with Normal-Karyotype Acute Myeloid Leukemia after Allogeneic Hematopoietic Cell Transplantation**  
*Jae-Sook Ahn, Hyeoung-Joon Kim, Yeo-Kyeong Kim, Seun-Shin Lee, Sung-Hoon Jung, Deok-Hwan Yang, Je-Jung Lee, Nan Young Kim, Seung Hyun Choi, Chul Won Jung, Jun-Ho Jang, Hee Je Kim, Joon Ho Moon, Sang Kyun Sohn, Jong-Ho Won, Sung-Hyun Kim, Dennis Dong Hwan Kim*
- 71**     **Atorvastatin for the Prophylaxis of Acute Graft-versus-Host Disease in Patients Undergoing HLA-Matched Related Donor Allogeneic Hematopoietic Stem Cell Transplantation (allo-HCT)**  
*Yvonne A. Efebera, Susan Geyer, Leslie Andritsos, Sumithira Vasu, Samantha Jaglowski, Anissa Bingman, William Blum, Rebecca Klisovic, Craig C. Hofmeister, Don M. Benson, Sam Penza, Patrick Elder, Katie Cortright, Rhonda Kitzler, Kevin Coombes, Lynn O'Donnell, Beth Daneault, Hillary Bradbury, Jianying Zhang, Xilin Chen, Sabrina Garman, Parvathi Ranganathan, Xueyan Yu, Jessica Hofstetter, Jianhua Yu, Ramiro Garzon, Scott R. Scrape, Gerard Lozanski, Steven M. Devine*

- 80**     **Phase II Trial of Reduced-Intensity Busulfan/Clofarabine Conditioning with Allogeneic Hematopoietic Stem Cell Transplantation for Patients with Acute Myeloid Leukemia, Myelodysplastic Syndromes, and Acute Lymphoid Leukemia**  
*Areej El-Jawahri, Shuli Li, Karen K. Ballen, Corey Cutler, Bimalangshu R. Dey, Jessica Driscoll, Chrisa Hunnewell, Vincent T. Ho, Steven L. McAfee, Cathleen Poliquin, Meredith Saylor, Robert J. Soiffer, Thomas R. Spitzer, Edwin Alyea, Yi-Bin Chen*
- 86**     **Dynamic Detection of Anti-Human Leukocyte Antigen (HLA) Antibodies but not HLA-DP Loci Mismatches Can Predict Acute Graft-versus-Host Disease and Overall Survival in HLA 12/12-Matched Unrelated Donor Allogeneic Hematopoietic Stem Cell Transplantation for Hematological Malignancies**  
*Zhijuan Pan, Xiaoni Yuan, Yang Li, Xiaojin Wu, Wenjuan Zhu, Xiaojin Bao, Qinqin Zhao, Jun He*

**CLINICAL RESEARCH:  
PEDIATRIC**

---

- 96**     **Determination of Eligibility in Related Pediatric Hematopoietic Cell Donors: Ethical and Clinical Considerations. Recommendations from a Working Group of the Worldwide Network for Blood and Marrow Transplantation Association**  
*Menachem Bitan, Suzanna M. van Walraven, Nina Worel, Lynne M. Ball, Jan Styczynski, Marta Torrabadella, Volker Witt, Bronwen E. Shaw, Adriana Seber, Hiromasa Yabe, Hildegard T. Greinix, Christina Peters, Eliane Gluckman, Vanderson Rocha, Joerg Halter, Michael A. Pulsipher*
- 104**    **Parent Outlook: How Parents View the Road Ahead as They Embark on Hematopoietic Stem Cell Transplantation for Their Child**  
*Christina K. Ullrich, Angie Mae Rodday, Kristin Bingen, Mary Jo Kupst, Sunita K. Patel, Karen L. Syrjala, Lynnette L. Harris, Christopher J. Recklitis, Lisa Schwartz, Stella Davies, Eva C. Guinan, Grace Chang, Joanne Wolfe, Susan K. Parsons*
- 112**    **Single-Agent Post-Transplantation Cyclophosphamide as Graft-versus-Host Disease Prophylaxis after Human Leukocyte Antigen-Matched Related Bone Marrow Transplantation for Pediatric and Young Adult Patients with Hematologic Malignancies**  
*Elad Jacoby, Allen Chen, David M. Loeb, Christopher J. Gamper, Elias Zambidis, Nicolas J. Llosa, Jeffrey Huo, Kenneth R. Cooke, Rick Jones, Ephraim Fuchs, Leo Luznik, Heather J. Symons*

**CLINICAL RESEARCH:  
ALTERNATIVE DONORS**

---

- I 19 Haploidentical T Cell–Replete Transplantation with Post-Transplantation Cyclophosphamide for Patients in or above the Sixth Decade of Age Compared with Allogeneic Hematopoietic Stem Cell Transplantation from an Human Leukocyte Antigen–Matched Related or Unrelated Donor**  
*Didier Blaise, Sabine Fürst, Roberto Crocchiolo, Jean El-Cheikh, Angela Granata, Samia Harbi, Reda Bouabdallah, Raynier Devillier, Stephania Bramanti, Claude Lemarie, Christophe Picard, Christian Chabannon, Pierre-Jean Weiller, Catherine Faucher, Bilal Mohty, Norbert Vey, Luca Castagna*
- I 25 Comparison of Outcomes of Hematopoietic Cell Transplants from T-Replete Haploidentical Donors Using Post-Transplantation Cyclophosphamide with 10 of 10 HLA-A, -B, -C, -DRB1, and -DQB1 Allele-Matched Unrelated Donors and HLA-Identical Sibling Donors: A Multivariable Analysis Including Disease Risk Index**  
*Asad Bashey, Xu Zhang, Katelin Jackson, Stacey Brown, Michelle Ridgeway, Melhem Solh, Lawrence E. Morris, H. Kent Holland, Scott R. Solomon*
- I 34 Risk Factors for Acute and Chronic Graft-versus-Host Disease after Allogeneic Hematopoietic Cell Transplantation with Umbilical Cord Blood and Matched Sibling Donors**  
*Aleksandr Lazaryan, Daniel J. Weisdorf, Todd DeFor, Claudio G. Brunstein, Margaret L. MacMillan, Nelli Bejanyan, Shernan Holtan, Bruce R. Blazar, John E. Wagner, Mukta Arora*
- I 41 A Two-Step Haploidentical Versus a Two-Step Matched Related Allogeneic Myeloablative Peripheral Blood Stem Cell Transplantation**  
*Sameh Gaballa, Neil Palmisiano, Onder Alpdogan, Matthew Carabasi, Joanne Fillicko-O'Hara, Margaret Kasner, Walter K. Kraft, Benjamin Leiby, Ubaldo Martinez-Outschoorn, William O'Hara, Barbara Pro, Shannon Rudolph, Manish Sharma, John L. Wagner, Mark Weiss, Neal Flomenberg, Dolores Grosso*

**CLINICAL RESEARCH:  
SUPPORTIVE CARE**

---

- I 49 Safety and Efficacy of Combination Antiretroviral Therapy in Human Immunodeficiency Virus–Infected Adults Undergoing Autologous or Allogeneic Hematopoietic Cell Transplantation for Hematologic Malignancies**  
*Christine Johnston, Robert Harrington, Rupali Jain, Joshua Schiffer, Hans-Peter Kiem, Ann Woolfrey*
- I 57 *Clostridium Difficile* Colonization in Hematopoietic Stem Cell Transplant Recipients: A Prospective Study of the Epidemiology and Outcomes Involving Toxigenic and Nontoxigenic Strains**  
*Tania Jain, Christopher Croswell, Varinia Urdy-Cornejo, Reda Awali, Jessica Cutright, Hossein Salimnia, Harsha Vardhan Reddy Banavasi, Alyssa Liubakka, Paul Lephart, Teena Chopra, Sanjay G. Revankar, Pranatharthi Chandrasekar, George Alangaden*

- 164**     **Long-Term Safety Outcomes in Patients with Hematological Malignancies Undergoing Autologous Hematopoietic Stem Cell Transplantation Treated with Palifermin to Prevent Oral Mucositis**  
*Patrick J. Stiff, Mika Leinonen, Torbjörn Kullenberg, Mattias Rudebeck, Maarten de Chateau, Ricardo Spielberger*

---

## BRIEF ARTICLES

---

- 170**     **Predicted Indirectly ReCognizable HLA Epitopes Class I Promote Antileukemia Responses after Cord Blood Transplantation: Indications for a Potential Novel Donor Selection Tool**  
*Kirsten A. Thus, Talitha A. de Hoop, Roel A. de Weger, Marc B. Bierings, Jaap Jan Boelens, Eric Spierings*
- 174**     **Adenovirus Viremia in Adult CD34<sup>+</sup> Selected Hematopoietic Cell Transplant Recipients: Low Incidence and High Clinical Impact**  
*Yeon Joo Lee, Yao-Ting Huang, Seong Jin Kim, Molly Maloy, Roni Tamari, Sergio A. Giral, Esperanza B. Papadopoulos, Ann A. Jakubowski, Genovefa A. Papanicolaou*
- 179**     **Combination Therapy with Inolimomab and Etanercept for Severe Steroid-Refractory Acute Graft-versus-Host Disease**  
*Lenneke F.J. van Groningen, Aleida M. Liefferink, Anton F.J. de Haan, Nicolaas P.M. Schaap, J. Peter Donnelly, Nicole M.A. Blijlevens, Walter J.F.M. van der Velden*

---

## LETTERS TO THE EDITOR

---

- 183**     **Correspondence Regarding the Consensus Statement from the Worldwide Network for Blood and Marrow Transplantation Standing Committee on Donor Issues**  
*Jane E. Churpek, Andrew Artz, Michael Bishop, Hongtao Liu, Lucy A. Godley*
- 185**     **Pharmacokinetic and Analytical Issues in Busulfan Area Under the Curve Estimation and Simulation**  
*Michael Philippe, Nathalie Bleyzac, Sylvain Goutelle*
- 186**     **Reply to “Pharmacokinetic and Analytical Issues in Busulfan Area Under the Curve Estimation and Simulation”**  
*L. Lee Dupuis, Jamie H. Zao, Tal Schechter*

---

## BOOK REVIEWS

---

- 187**     **Blood and Marrow Transplant Handbook**  
*Mei Lin, Philip L. McCarthy*
- 189**     **New Wine in New Bottle**  
*Yogesh Jethava, Parameswaran Hari*

---

## ASBMT NEWS

---

- 190**     **ASBMT News**